some embodiments, the first light source, the second light source and the third light source emit light through a single fiber (or larger structures such as an endoscope or laproscope) at different times. In some embodiments the single fiber may be a component of an endoscope or laproscope. In specific embodiments, the signal obtained from the first light source is used to orient or position the light source(s) used to perform the blood flow interruption and tissue removal functions. In some embodiments, the blood flow interruption (e.g. coagulation) and tissue removal functions may be performed by a separate second and third light source, while in other embodiments, the blood flow interruption and tissue removal functions may be performed by the same light source (e.g. the second light source).

[0012] In particular embodiments, the first light source may comprise an OCT light source. In other embodiments, the first light source may comprise a short pulsed light source suitable for MPL, and in still other embodiments, the first light source may be utilized for both OCT and MPL. In certain embodiments, the third light source can be a diode laser seeded fiber amplified source, and in particular embodiments, the diode laser seeded fiber amplified source can be configured to emit energy in a range of wavelengths from 1800 nm to 2200 nm. In some embodiments, the diode laser seeded fiber amplified source can be configured to emit energy having a pulse profile, a pulse energy, and a pulse repetition rate. In particular embodiments, at least one of the pulse profile, pulse energy and pulse repetition rate can be controlled to adjust a tissue removal rate.

[0013] In certain embodiments, the third light source can be a tunable semiconductor laser seeded fiber amplified source, and in particular embodiments the tunable semiconductor laser seeded fiber amplified source can be configured to emit energy in a range of wavelengths from 1800 nm to 2200 nm. In some embodiments, the tunable semiconductor laser seeded fiber amplified source can be configured to emit energy having a pulse profile, a pulse energy, and a pulse repetition rate. In specific embodiments, at least one of the pulse profile, pulse energy and pulse repetition rate can be controlled to adjust a tissue removal rate.

[0014] In certain embodiments, the third light source can be configured to break molecular bonds of tissue coagulated by the second light source when the third light source is incident upon tissue. In particular embodiments, the third light source can be configured to alter the quaternary structure of proteins of tissue when the third light source is incident upon tissue.

[0015] In particular embodiments, the signal(s) obtained from the first light source is (are) input into a computer processor. In some embodiments, the computer processor provides output data used to control an orientation or position of the second light source and the third light source. In some embodiments, the computer processor provides output data used to control pulse profile, pulse energy and pulse repetition rate of the third light source. In certain embodiments, the second light source is a laser that emits energy in a range of wavelengths that are absorbed by blood. In specific embodiments, the blood comprises a mixture of oxy-hemoglobin, deoxy-hemoglobin and water. In some embodiments, the blood contains hemoglobin that comprises pure oxy-hemoglobin. In certain embodiments, the blood contains hemoglobin that comprises pure deoxy-hemoglobin. In particular embodiments, the second light source is a ytterbium fiber laser, a yttrium aluminum garnet (YAG) laser, a frequency-doubled ytterbium fiber laser, a frequency-doubled YAG laser, a dye laser, or a Tm fiber laser.

[0016] In certain embodiments, the second light source can be a frequency-doubled ytterbium fiber laser. In particular embodiments, the third light source can be a Tm doped fiber master oscillator power amplifier (MOPA). In some the Tm doped MOPA seed laser is can be a semiconductor diode laser. In specific embodiments, the seed laser can be a tunable laser.

[0017] In certain embodiments, the second light source is configured to emit energy in a range of wavelengths including 532 nm, 585 nm, 1064 nm and/or 1940 nm, and in particular embodiments, the second light source is configured to emit energy in a range of wavelengths from 350 nm to 2200 nm.

[0018] In some embodiments, the optical coherence tomography light source is configured as a swept source optical coherence tomography light source. In specific embodiments, the optical coherence tomography light source is configured as a broadband optical coherence tomography light source. In some embodiments, the first light source comprises a multiphoton luminescence light source, and in particular embodiments the first light source comprises an optical coherence tomography light source and a multiphoton luminescence light source. In certain embodiments, the second light source is configured to emit energy at an amplitude and frequency sufficient to modify at least quaternary structure of tissue proteins without substantially breaking the molecular bonds of the tissue. In particular embodiments, the third light source is a laser configured to emit energy at an amplitude and frequency sufficient to break molecular bonds of tissue.

[0019] Specific embodiments include a system comprising: an imaging light source configured to provide data for use in imaging tissue when the first light source is incident upon tissue; a coagulating light source configured to emit coagulating light to coagulate tissue when the coagulating light is incident upon tissue; and a bond-breaking light source configured to emit bond-breaking light to break molecular bonds of tissue coagulated by the second light source when the bond-breaking light source is incident upon tissue. In some embodiments, the imaging light source comprises an optical coherence or a multiphoton luminescence light source, and in particular embodiments the imaging light source comprises an optical coherence tomography light source and a multiphoton luminescence light source.

[0020] In certain embodiments, the coagulating light and the bond-breaking light originate from a common light source. In particular embodiments, the common light source is a diode laser seeded fiber amplified source. In some embodiments, the diode laser seeded amplified source can be configured to emit energy in a range of wavelengths from 1800 nm to 2200 nm. In specific embodiments, the diode seeded fiber amplified source can be configured to emit energy having a pulse profile, a pulse energy, and a pulse repetition rate. In certain embodiments, at least one of the pulse profile, pulse energy and pulse repetition rate can be controlled to adjust tissue coagulation. In certain embodiments, at least one of the pulse profile, pulse energy and pulse repetition rate can be controlled to adjust a tissue removal rate.

[0021] In specific embodiments, the common light source can be a tunable semiconductor laser seeded fiber amplified source. In particular embodiments, the tunable semiconduc-